CLAIMS

What is claimed:

1. A radiation receiving apparatus for use in solid-state image sensor comprising:

a less sensitive pixel for receiving a first portion of a radiation spectrum;

a more sensitive pixel for receiving a second portion of the radiation spectrum; and

a microlens located between the less sensitive pixel and a source of radiation such that a substantial amount of the first portion of the radiation spectrum incident upon the microlens is refracted to the less sensitive pixel whereby an inherent difference in sensitivity between the less sensitive pixel and the more sensitive pixel is decreased.

2. The radiation receiving apparatus of Claim 1 wherein each pixel includes a detecting area.

3. The radiation receiving apparatus of Claim 2 wherein the microlens refracts radiation that would not otherwise have fallen on the detecting area onto the detecting area of the less sensitive pixel.

4. The radiation receiving apparatus of Claim 1 wherein the less sensitive pixel further includes a detecting area and the microlens has a face area wherein a ratio of the face area to the detecting area is determined by the inherent difference in sensitivity between the less sensitive pixel and the more sensitive pixel.

5. The radiation receiving apparatus of Claim 4 wherein the less sensitive pixel converts a given intensity of the first portion of the radiation spectrum into a first signal level, the more sensitive pixel converts a similar given intensity of the second portion of the radiation spectrum into a second signal level and the ratio of the face area of the microlens to the detecting area is substantially similar to a ratio of the second electrical signal to the first electrical signal.

6. The radiation receiving apparatus of Claim 5 wherein the less sensitive pixel detects blue light.

7. The radiation receiving apparatus of Claim 5 wherein the more sensitive pixel detects red light.

8. The radiation receiving apparatus of Claim 1 wherein the less sensitive pixel has a perimeter and the microlens has a perimeter that extends substantially to the perimeter of the less sensitive pixel.

9. The radiation receiving apparatus of Claim 1 wherein the less sensitive pixel has a surface area and the microlens has a face area that covers substantially all of the surface area of the less sensitive pixel.

10. The radiation receiving apparatus of Claim 1 wherein the the radiation spectrum is invisible light selected from the group essentially consisting of:

X-ray radiation;

Gamma radiation;

Ultraviolet light;

Microwave radiation; and

Infrared light.

11. A radiation receiving apparatus for use in solid-state image sensor comprising:

two or more less sensitive pixels for receiving a first portion of a radiation spectrum, each of the less sensitive pixels having a perimeter;

a more sensitive pixel for receiving a second portion of the radiation spectrum; and

at least one microlens located between at least one of the less sensitive pixels and a source of radiation such that a substantial amount of the first portion of the radiation spectrum incident upon the microlens is refracted to the at least one of the

less sensitive pixels associated with the microlens whereby an inherent difference in sensitivity between the less sensitive pixel and the more sensitive pixel is decreased, wherein the less sensitive pixels are physically separated, the microlens having a perimeter that extends to the perimeter of its associated less sensitive pixel.

12. The radiation receiving apparatus of Claim 11 wherein the at least one microlens has a face area in physical proximity to at least one of the less sensitive pixels, the face area having a microlens perimeter, the less sensitive pixel has a perimeter and the less sensitive pixel is physically separated from another less sensitive pixel such that the microlens perimeter extends to the perimeter of the less sensitive pixel.

13. A method for improving the signal to noise ratio of a radiation receiving apparatus, the method comprising:

defining a pixel array having a plurality of pixels such that each pixel of the plurality of pixels converts a corresponding portion of the radiation spectrum to an electrical signal;

locating a less sensitive pixel within the pixel array wherein the less sensitive pixel is less sensitive than another pixel of the pixel array; and

deploying a microlens in physical proximity to the less sensitive pixel between its photoconductor and a radiation source.

14. The method of Claim 13 wherein locating further includes the less sensitive pixel having a detecting area.

15. The method of Claim 14 wherein deploying further includes the microlens having a face area in physical proximity to the less sensitive pixel, the face area having a perimeter, the method further comprising:

calculating an inherent difference in sensitivity between the less sensitive pixel and a more sensitive pixel; and

determining a ratio of the face area to the detecting area in relation to the inherent difference in sensitivity.

16. The method of Claim 15 further comprising selecting the perimeter of the microlens in relation to the ratio.

17. The method of Claim 14 further comprising:

determining a less sensitive signal level wherein the less sensitive pixel converts a given intensity of a first portion of the radiation spectrum into the less sensitive signal level;

determining a more sensitive signal level, wherein the more sensitive pixel converts another given intensity of the second portion of the radiation spectrum into the more sensitive second signal level; and

determining a ratio of the face area to the detecting area, wherein the ratio is substantially similar to a ratio of the more sensitive signal level to the less sensitive signal level.

18. The method of Claim 17 further comprising selecting the perimeter of the microlens in relation to the ratio.

19. The method of Claim 13 wherein locating includes a less sensitive pixel having a perimeter; further including the step of separating physically the less sensitive pixel from another less sensitive pixel such that the microlens extends to the perimeter of the less sensitive pixel.

20. A radiation receiving apparatus for use in association with a solid-state image sensor comprising:

a less sensitive pixel within the array of pixels for detecting a first portion of the radiation spectrum and converting the first portion of the radiation spectrum into a first electrical signal;

a more sensitive pixel within the array of pixels for detecting a second portion of the radiation spectrum and converting the second portion of the radiation spectrum into a second electrical signal; and

means for increasing the intensity of radiation incident upon the less sensitive pixel.

21. The radiation receiving apparatus of Claim 20 wherein the means for increasing the intensity of radiation further increases the intensity at a detecting areas of the less sensitive pixel.